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EXAMINER

CHOI, PETER H

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/973,757	Applicant(s) TAMARU, MASATAKE	
	Examiner PETER CHOI	Art Unit 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a **FINAL** office action upon examination of application number 09/973,757. Claims 33-64 are pending in the application and have been examined on the merits discussed below.

Response to Amendment

2. In the response filed September 24, 2008, claims 33, 38, 46, 48, 56, 62, 63, and 64 have been amended.

Response to Arguments

3. Applicant's arguments filed September 24, 2008 have been fully considered but they are not persuasive.

Applicant argues that Melby is not prior art because it was filed on October 31, 2000, whereas the earliest priority date of the instant application is October 12, 2000.

The Examiner respectfully disagrees. Although, as point out by the Applicant, Melby was filed on October 31, 2000, it is dependent on provisional application 60/166,042, which was filed on November 17, 1999. Using the filing date of the provisional application, Melby is indeed prior art.

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Applicant argues that the work machines (specifically the fork lifts) in Melby are not “construction machines engaged in construction work”.

The Examiner respectfully disagrees. The Examiner notes that the use of the claimed work machines to perform "construction work" is merely a statement of the intended use of the claimed invention and does not set forth a structural or functional limitation. Specifically, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The Examiner notes that “construction work” is a broad term that may encompass a plurality of activities and tasks. One example of “construction work” may involve the transport of materials between worksites or the need to raise, lower, and/or move loads of materials, which are well within the functional capabilities of a forklift; therefore, the Examiner asserts that the fork lifts of Melby are indeed “work machines” in “construction work”, and thereby meet this limitation of the claimed invention. Further, the Examiner notes that Melby is drawn to tracking and managing a plurality of assets, which are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery used in the manufacture of goods in a typical factory environment, and could also be used to track and manage any type of assets used in the manufacture of goods or the performance of services. Thus, the Examiner asserts that Melby contemplates the application of its teachings to other machines and

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"assets" beyond forklifts, which may extend to machines used in performing "construction work".

The following argument raised by the Applicant is directed towards newly amended claim limitations introduced in the response filed September 24, 2008, have been fully considered and have been addressed in the updated rejection below.

Specifically, Applicant argues that none of Melby's forklifts transmits work instructions to other work machines nor manages the other forklifts and itself as well. Applicant further argues that Melby only discloses "transmitting" data from forklifts and not receiving, and therefore, Melby's leader forklift does not receive the work machine information and transmit work instructions to the other forklifts.

Applicant argues that the Wolstenholme and Gibson reference provided as evidence of Official Notice (that it is old and well known in the art to distribute information only to leaders, who in turn propagate said distributed information to subordinates as necessary) are not in a field of endeavor related to construction machines and construction project management, and thus are improper references under 35 USC 103(a) and must be withdrawn.

The Examiner respectfully disagrees. The Examiner notes that the Wolstenholme and Gibson references were not cited as part of the grounds of rejection

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of the claimed rejection, and merely provided as evidence of the Official Notice taken.

Further, the Official Notice taken was to establish that the principle of designating a single point of contact (a “leader”) who propagates information to their subordinates is old and well known in the art, fulfilling the Examiner’s duties as the factfinder when resolving the Graham inquiries, and ensuring that the written record includes findings of fact concerning the state of the art and the teachings of the references applied by including explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. The determination of obviousness is made based on what a person of ordinary skill would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. **This is so regardless of whether the source of that knowledge and ability was documentary prior art, general knowledge in the art, or common sense. Prior art is not limited to just the references being applied, but includes the understanding of one of ordinary skill in the art.** (emphasis added). Therefore, there is no need to withdraw the references under 35 USC 103(a), nor are the references improper.

Applicant further argues that the Official Notice taken has nothing to do with a “leader machine” but rather that the scope of “leader” taken in the Official Notice is limited to the specific people and threat alarm systems.

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The Examiner respectfully disagrees. Further, the Official Notice taken was to establish that the principle of designating a single point of contact (a "leader") who propagates information to their subordinates is old and well known in the art, fulfilling the Examiner's duties as the factfinder when resolving the Graham inquiries, and ensuring that the written record includes findings of fact concerning the state of the art and the teachings of the references applied by including explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. The determination of obviousness is made based on what a person of ordinary skill would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. **This is so regardless of whether the source of that knowledge and ability was documentary prior art, general knowledge in the art, or common sense. Prior art is not limited to just the references being applied, but includes the understanding of one of ordinary skill in the art.** (emphasis added).

Further, as previously asserted by the Examiner, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. *In re Venner*, 120

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USPQ 192. Specifically, using a machine to act as a “leader” (i.e., automating the function of a “leader” to have a machine serve as said “leader”) is not sufficient to distinguish over the prior art. The evidence provided to support the Examiner’s assertion that “distribut[ing] information only to leaders, who, in turn, propagate the distribution of information of subordinates as necessary”, combined with the fact that automating a well-known activity is not sufficient to distinguish over prior art would obviate the combination in meeting the limitation.

The Applicant argues that the Official Notice statement that “it is old and well known in the art to notify relevant parties of the status and availability (or unavailability) of a work machine at a site” is entirely too broad since it does not limit who the “relevant” parties are. The Applicant further questions whether the entire world is notified and how “relevant” is defined. Applicant has requested a proper reference to be cited to maintain the Official Notice.

The Examiner respectfully disagrees. Clearly, the entire world is not “relevant” to the particular matters of a project or machine availability/status. “Relevant” parties are limited to those who have a bearing on or connection with the matter at hand, such as a machine operator or the construction crew at a worksite.

Further, Gudat et al. teaches monitoring machines at a work site and using a single machine to provide real time position and site progress of multiple machines

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operating on a site **(The present invention addresses the need for coordinating the movement and work of multiple machines 14 working on the same site 12. This is achieved by creating a common, dynamically-updated site database reflecting the real time position and site progress of multiple machines operating on the site and using that common database to give a machine operator or supervisor accurate, coordinate, real time machine position and site update information for every machine operating on the site. Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 51-63, Column 6, lines 4-7]. Therefore, the Official Notice is maintained and remains entered as prior art.

Official Notice

Applicant has attempted to challenge the Examiner's taking of Official Notice in the Office Action mailed December 20, 2005. There are minimum requirements for a challenge to Official Notice:

(a) In general, a challenge, to be proper, must contain adequate information or arguments so that *on its face* it creates a reasonable doubt regarding the circumstances justifying the Official Notice

(b) Applicants must seasonably traverse (challenge) the taking of Official Notice as soon as practicable, meaning the next response following an Office Action. If

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an applicant fails to seasonably traverse the Official Notice during examination, his right to challenge the Official Notice is waived.

Applicant has not provided adequate information or arguments so that *on its face* it creates a reasonable doubt regarding the circumstances justifying the Official Notice. Therefore, the presentation of a reference to substantiate the Official Notice is not deemed necessary. The Examiner's taking of Official Notice has been maintained.

Bald statements such as, "the Examiner has not provided proof that this element is well known" or "applicant disagrees with the Examiner's taking of Official Notice and hereby requests evidence in support thereof", are not adequate and do not shift the burden to the Examiner to provide evidence in support of the Official Notice.

In the previous Office Action mailed December 20, 2005, notice was taken by the Examiner that certain subject matter is old and well known in the art. Per MPEP 2144.03(c), these statements are taken as admitted prior art because no traversal of this statement was made in the subsequent response. Specifically, it has been taken as prior art that:

- It is old and well known in the arts to notify relevant parties of the status and availability (or unavailability) of work machines at a site
- Connecting data terminals to an electronic communications network, such as the internet, is a step that is old and well known in the art

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These statements of Official Notice stated above have already been admitted as prior art and support was provided in the previous Office Action mailed April 25, 2008.

In the previous Office Action mailed September 12, 2006, notice was taken by the Examiner that certain subject matter is old and well known in the art. Per MPEP 2144.03(c), these statements are taken as admitted prior art because no traversal of this statement was made in the subsequent response. Specifically, it has been taken as prior art that:

- Displaying information is old and well known in the art
- It is old and well known in the art for work plans to comprise a plurality of tasks
- It is old and well known in the art to assign resources to scheduled tasks
- It is old and well known in the art to collect data regarding environmental conditions
- Local, federal and international ordinances, regulations, and laws govern acceptable noise levels and toxic chemical concentration limits for areas in which work is performed

These statements of Official Notice stated above have already been admitted as prior art and support was provided in the previous Office Action mailed April 25, 2008.

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In the previous Office Action mailed May 7, 2007, notice was taken by the Examiner that certain subject matter is old and well known in the art. Specifically, Official Notice was taken that:

- it is old and well known in the art to distribute information only to leaders, who in turn propagate said distributed information to subordinates as necessary.

These statements of Official Notice stated above have already been admitted as prior art and support was provided in the previous Office Action mailed April 25, 2008.

Claim Rejections - 35 USC § 103

4. Claims 33-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Melby et al. (U.S Patent 6,952,680) in view of Gudat et al. (US Patent #5,646,844).

As per claim 33, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a plurality of work machines (**assets 11 – a plurality of pieces of movable industrial equipment; forklifts 31**), said plurality of work machines respectively including a first communication means (**each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis**) facilitating reciprocal communications (**transmitter 33 is**

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preferably embodied as a wireless communications system, such as represented by an antenna 34; the transmitters 33 and the wireless communications systems 34 can be embodied as conventional radio frequency transmitters provided on each of the forklifts 31 that transmit electromagnetic signals; wireless communications systems 34 are adapted to transmit signals that are representative of the sense operating conditions of the forklifts 31 through space to a receiver 35; the data acquisition units 32 and the receivers 35 are in bi-directional communication with one another) [Column 3, lines 55-57, Column 7, lines 5-8, 14-27, 38-39];

(b) a server apparatus **(remote analysis system 50)**, wherein at least one leader machine of said plurality of work machines **(local controller 36 that is adapted to receive and store data from each of the receivers 35 and to periodically transmit gathered and stored information regarding the individual operating characteristics to the remote analysis system 50 for analysis)** and said server apparatus including second communication means **(modem 52 or similar communications device; conventional modem 37 or other communications device; electronic communications network, such as the internet 40)** facilitating reciprocal communications between said server apparatus and said at least one leader work machine of said plurality of work machines [Column 7, lines 62-67, Column 8, lines 23-30, 48-52];

(c) each of said plurality of work machines being provided with work machine information detection means **(data acquisition device 32 is provided on each of the**

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forklifts 31 for sensing and storing one or more characteristics of the associated forklift) for detecting work machine information (operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)

[Column 4, lines 34-44, Column 6, lines 48-50, 52-63];

(d) a database (**analysis controller database 78**) storing data for managing said plurality of work machines (**real-time and historical information; maintenance information performed {step 82}**), and management information production means automatically producing management information (**determine that further preventative maintenance is required**) based on said work machine information and on said data stored in said database (**local controller 36 will have gathered and stored therein a certain amount of information regarding the individual operating characteristics for each of the forklifts 31. The local controller 37 is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis... The transmission of the information from the local controller 36 to the analysis controller 51 is automatically updated with the latest information regarding the status of the asset 31, without any human intervention. Based upon the updated information contained in the record of the asset 31, the analysis controller 51 next determines whether a sufficient period of time or**

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usage has elapsed as to trigger the performance of periodic routing maintenance for that asset 31... If it is determined that a sufficient amount of elapsed time or amount of usage had occurred, the method 60 branches from the step 65 to a step 66, wherein an electronic maintenance report is generated; By analyzing the [asset] data points, certain maintenance trends can be analyzed and problems can be anticipated before they affect asset utilization. For example, if it turns out that asset 31 has a tendency to need new batteries after a certain period of usage, the need for such batteries can be anticipated and stocked on site when appropriate to facilitate maintenance. As shown in Fig 4C, once the various trends have been analyzed for assets 31, at decision point 80 it is determined whether preventative maintenance is required. If it is required, the maintenance is performed as shown at point 82 and the information is stored in database 78. The asset data points are then analyzed again until it is determined that no further preventative maintenance is required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto), provided at said server apparatus [Column 9, line 63—Column 10, line 21, Column 12, lines 9-21, 56-57, Column 15, lines 30-38];

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(e) in conjunction with work progress of said plurality of work machines, said work machine information being detected by said work machine information detection means provided in said plurality of work machines, and the work machine information so detected being transmitted to said at least one leader work machine **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** through said first communication means [Column 7, lines 5-8, 14-27, 38-39];

(f) said at least one main work machine transmitting said transmitted work machine information to said server apparatus **(remote analysis system 50)** through said second communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** [Column 7, lines 5-8, 14-27, 38-39];

(g) said server apparatus **(remote analysis system 50)** producing said management information **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)** based on said transmitted work machine information from said at least one leader machine and on said data stored in said database **(real-time and historical information; determine that further preventative maintenance is required)**, and transmitting the management information so produced

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to said at least one main work machine through said second communication means **(all of the reports generated are automatically delivered through the Internet 40)**

[Column 6, lines 60-63, Column 15, lines 30-41]; and

(h) said at least one main work machine transmitting work instructions to other work machines of said plurality of work machines **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** through said first communication means **{As seen in Figure 3, reports would be transmitted via Internet 40 and model 37 to local controller 36 and receiver 35, which is further connected to forklifts 31 (i.e., work machine) via wireless communications system 34 (i.e., first communication means); forklifts 31 are connected to a plurality of other forklifts via the wireless communications system 34 and receiver 35; thus, reports are transmitted between work machines via the wireless communications system 34}**, responsive to receipt of said transmitted management information [Column 11, lines 42-44; Claim 9];

(i) wherein the work machines are construction machines engaged in construction work **(assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as**

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those described above, used in the manufacture of goods or the performance of services) [Column 3, lines 55-62].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. *In re Venner*, 120 USPQ 192.

Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (a) direct reciprocal communication between a plurality of work machines
- (g) transmitting the management information so produced only to said at least one leader work machine
- (h) only said at least one leader work machine transmitting work instructions to other work machines
- (j) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work

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- (k) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals)** [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines

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the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

Further regarding (g), Official Notice is taken that it is old and well known in the art to distribute information only to leaders, who, in turn propagate said distributed information to subordinates as necessary, as evidenced by Gudat et al., who teaches monitoring machines at a work site and using a single machine to provide real time position and site progress of multiple machines operating on a site **(The present invention addresses the need for coordinating the movement and work of multiple machines 14 working on the same site 12. This is achieved by creating a common, dynamically-updated site database reflecting the real time position and site progress of multiple machines operating on the site and using that common database to give a machine operator or supervisor accurate, coordinate, real time machine position and site update information for every machine operating on the site. Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 51-63, Column 6, lines 4-7]. Thus, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to include the step of transmitting information only to a leader work machine, because doing so would avoid, reduce, or

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eliminate undesirable overlap between machine operations, further enhancing the ability of Melby et al. to track and manage physical assets such as work machines. Further, the adoption of information distribution described above, in which information is distributed only to leaders, who further distribute said information to their subordinates, would have yielded no more than the predictable outcome which one of ordinary skill would have expected to achieve, i.e., the ability to distribute orders/instructions based on an information distribution hierarchy. It would have been recognized that applying the above-described technique of information distribution would have yielded predictable results because the level of ordinary skill in the art demonstrated by the references applied shows the ability to receive instructions from a central command station, and would have resulted in an improved system that allows the flow of information between machines to parallel the flow of information between the human operators of said machines to perform the work orders/instructions/commands received from leaders, and further to provide coordination of the movement and work of multiple machines working on the same site, providing accurate, coordinated, real time machine position and site update information for every machine operating on the site, as taught by Gudat et al. [Column 5, lines 52-60].

As per claim 34, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, wherein said at least one leader work machine includes a display device, and wherein said management information

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transmitted from said server apparatus to said at least one leader work machine is displayed on the display device.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that displaying information is old and well known in the art. Melby et al. provides for work order 166 to be transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance [Column 17, lines 21-30]. Melby teaches the generation of an electronic management report, which is delivered through the Internet 40. Melby discloses that the management report can advise the person or entity that owns or operates the asset. Melby also cites the benefit of analyzing relevant information to anticipate problems before they affect asset utilization [Column 12, lines 8-15]. Thus, the Examiner asserts that the management report contains written instructions or data that require some sort of display mechanism to be viewed and subsequently executed to avoid anticipated problems that would affect asset utilization; thus, it would have been obvious to one of ordinary skill in the art to modify the Melby-Gudat combination to display management information transmitted from a server apparatus, because doing so would enable the owner or operator of said asset to proactively take measures to avoid problems that affect asset utilization, thereby increasing the availability of work machines required to perform scheduled work.

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As per claim 35, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, wherein said prescribed work comprises a plurality of work processes; and said at least one leader work machine is determined for each of those work processes.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art for work plans to comprise a plurality of tasks. It has also been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art to assign resources to scheduled tasks. Melby et al. is directed towards actively managing the operation of assets (machines); thus assigning resources to each of the scheduled tasks comprising a work plan would enable a user to ensure that adequate resources are available to perform all the scheduled work comprising a work plan. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to assign work machines to each of a plurality of work processes comprising a scheduled work plan, because doing so would allow the Melby-Gudat combination to effectively manage and allocate resources to meet the demand necessitated by work orders. Maximizing productivity and reducing operating costs and administrative burdens is a goal of Melby et al. [Column 2, lines 45-46].

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As per claim 36, Melby et al. teaches the work machine management system according to claim 33, wherein said management information produced by said server apparatus and transmitted to said at least one leader work machine is information relating to maintenance that should be performed on any of said plurality of work machines **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** [Column 16, lines 26-30].

As per claim 37, Melby et al. teaches the work machine management system according to claim 33, wherein said management information produced by said server apparatus and transmitted to said at least one main work machine is information relating to a trouble that has occurred in any of said plurality of work machines **(fault code may be generated based on the actions of the asset operator)** [Column 16, lines 6-7].

Claim 38 recites limitations already addressed by the rejection of claim 33 above; therefore, the same rejection applies.

Claim 39 recites limitations already addressed by the rejection of claim 34 above; therefore, the same rejection applies.

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Claim 40 recites limitations already addressed by the rejection of claim 35 above; therefore, the same rejection applies.

As per claim 41, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus transmits information relating to maintenance that should be done to any of said plurality of work machines **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** [Column 16, lines 26-30], and said server apparatus transmits a revised scheduled work plan produced by revising the scheduled work plan in conjunction with the performance of maintenance **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)**, to said at least one leader work machine [Column 17, lines 5-9].

As per claim 42, Melby et al. teaches the work machine management system according to claim 38, further comprising:

(a) a terminal apparatus **(handheld device 168)** provided on an end where maintenance is done on said plurality of work machines, said terminal apparatus being connected to said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

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(b) wherein said server apparatus transmits information relating to maintenance that should be done to any of said plurality of work machines, and transmits a revised scheduled work plan produced by revising the scheduled work plan in conjunction with the performance of maintenance, to said at least one leader work machine **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said at least one leader work machine transmits instructions for performing maintenance, based on the transmitted information relating to maintenance **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from the knowledgebase)**, to said terminal apparatus through said second communication means, and transmits work instructions to other work machines of said plurality of work machines through said first communication means based on said revised scheduled work plan [Column 17, lines 12-16].

As per claim 43, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus transmits information relating to trouble that has arisen in said plurality of work machines **(fault codes)**, and a revised scheduled work plan produced by revising the scheduled work plan responsive to the troubles **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively**

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schedule and carry out the maintenance), to said main at least one leader work machine [Column 17 lines 5-9].

As per claim 44, Melby et al. teaches the work machine management system according to claim 38, further comprising:

(a) a trouble correction terminal apparatus **(handheld device 168)** provided on the end where trouble with said plurality of work machines is corrected, the trouble correction terminal being connected to said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

(b) wherein said server apparatus transmits information relating to the trouble **(fault code)**, and a revised scheduled work plan produced by revising the scheduled work plan responsive to the trouble, to said at least one leader work machine **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said at least one leader work machine transmits instructions for correcting the trouble, based on the information relating to the trouble **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from**

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the knowledgebase), to said trouble correction terminal apparatus through said second communication means, and transmits work instructions to other work machines of said plurality of work machines through said first communication means in accordance with said revised scheduled work plan [Column 17, lines 12-16].

As per claim 45, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus stores in memory a schedule and performance results data indicating a relationship between a scheduled work plan previously produced and an actual work performance result as performed in accordance with said scheduled work plan **(determine whether a predetermined period of time has elapsed in order to generate a periodic management report covering some or all of the assets being tracked; real-time and historical information; maintenance information performed {step 82}; determine whether scheduled maintenance has been performed, and determining the party responsible for certain maintenance activities; information regarding maintenance performed is stored in database 78)**, and said server apparatus produces a new scheduled work plan responsive to said schedule and said performance results data [Column 11, lines 64-66, Column 12, lines 18-19, 56-57].

As per claim 46, Melby et al. teaches a scheduled work plan production apparatus that, in cases where a scheduled work plan is produced according to work request data indicating particulars of work requested by an ordering party, and work is

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caused to be done, using a plurality of work machines, based on said produced scheduled work plan, produces said scheduled work plan, comprising:

(a) a plurality of work machines (**assets 11 – a plurality of pieces of movable industrial equipment; forklifts 32**) [Column 3, lines 55-57], said plurality of work machines respectively including its first communication means facilitating reciprocal communications (**each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis**) between said plurality of work machines facilitating reciprocal communications (**transmitter 33 is preferably embodied as a wireless communications system, such as represented by an antenna 34; the transmitters 33 and the wireless communications systems 34 can be embodied as conventional radio frequency transmitters provided on each of the forklifts 31 that transmit electromagnetic signals; wireless communications systems 34 are adapted to transmit signals that are representative of the sense operating conditions of the forklifts 31 through space to a receiver 35; the data acquisition units 32 and the receivers 35 are in bi-directional communication with one another**) [Column 7, lines 5-8, 14-27, 38-39];

(b) a server apparatus (**remote analysis system 50**) [Column 7, lines 8 , Figure 3];

(c) a database (**analysis controller database 78**) for storing schedule and performance results data indicating a relationship between a scheduled work plan

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previously produced and an actual work performance result as performed on basis of a scheduled work plan **(determine whether a predetermined period of time has elapsed in order to generate a periodic management report covering some or all of the assets being tracked; real-time and historical information; maintenance information performed {step 82}; determine whether scheduled maintenance has been performed, and determining the party responsible for certain maintenance activities)** the data base being provided **(information regarding maintenance performed is stored in database 78)** at said server apparatus **(remote analysis system 50 {which is also connected to an electronic communications network})**

[Column 11, lines 64-66, Column 12, lines 18-19, 56-57]

(d) wherein a terminal apparatus **(handheld device 168)** on an end of an ordering party; said server apparatus and only at least one leader work machine of said plurality of work machines, which are connected by a communication means facilitating reciprocal communications **(handheld device 168 is in real-time two way communication with analysis controller database 78)** only among said terminal apparatus of said ordering machine, said server apparatus, and at least one leader work machine of said plurality of work machines [Column 17, lines 25-27];

(e) wherein said work request data are input from said terminal apparatus on said ordering party end through said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database, thus, dealer billing systems, inventory listings, customer work order approval records, fleet management information can be accessed by handheld device 168;**

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handheld device 168 is used to update database 78 including labor information and an identification of any parts required to effect a repair) [Column 17, lines 24-30, 35-38];

(f) wherein said server apparatus automatically produces a scheduled work plan **(work order 166)** based on input work request data and on a schedule and performance results data stored in said database, and said server apparatus transmits said scheduled work plan to said at least one leader work machine only through said second communication means **(work order 166 is generated based on approved preventative maintenance and includes all of the critical operating data required to effectively schedule and carry out the maintenance, including hour meter reading, any fault codes, asset identification criteria, operator of record, contact information and asset location. Moreover, based on information contained within the fault code or retrieved from the knowledgebase, information concerning anticipated parts may also be provided as well as the nearest location from where they may be retrieved. Finally, the work order 166 preferably contains the past recent history of the particular asset 31 so that the mechanic can use this information to expedite maintenance; In response to such information [information received associated with each of the assets], the remote analysis system automatically analyzes the newly provided information and schedules maintenance as required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically**

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sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance; remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance problems, when routine maintenance is required} received from the Internet), and updates said schedule and performance results data in said database (The remote analysis system automatically updates individuals associated with each of the assets with the information received... Information associated with the maintenance is also recorded electronically to maximize efficiency, provide historical trends, automate billing, and control inventory levels) [abstract, Column 2, lines 55-57, Column 15, lines 30-38, Column 17, lines 1-20];

(g) said at least one leader work machine giving work instructions to said plurality of work machines through said first communication means based on said scheduled work plan (**work order 166**) transmitted from said server apparatus, and said plurality of work machines transmitting actual work performance result as performed on a basis of said scheduled work plan to said server apparatus through said communication means (**carrying out said work order to maintain the asset**) [Claim 9]; and

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(h) wherein said server apparatus (**remote analysis system 50**) updates said database (**analysis controller database 78**) with said actual work performance result (**remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance problems, when routine maintenance is required} received from the Internet**) [Column 2, lines 55-57];

wherein the work machines are construction machines engaged in construction work (**assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as those described above, used in the manufacture of goods or the performance of services**) [Column 3, lines 55-62].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. *In re Venner*, 120 USPQ 192.

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Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (a) direct reciprocal communication between a plurality of work machines
- (j) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work
- (k) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals)** [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site**

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database locally, and transmit signals to each machine to direct their operation)

[Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

As per claim 47, Melby et al. teaches the scheduled work plan production apparatus according to claim 46, wherein:

(a) when revision data for revising scheduled work plan are provided, said server apparatus revises the scheduled work plan based on those revision data, said work request data, and said schedule and said performance results data **(handheld device 168 is used to update database 78, including labor information and an identification of any parts required to effect a repair)**, to produce a revised scheduled work plan, and said server apparatus transmits said revised scheduled work plan to said at least one leader machine of said plurality of work machines through said communication means **(handheld device 168 is in real-time two way communication**

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with analysis controller database) [Column 2, lines 55-57, Column 17, lines 24-27, 35-38]; and

(b) said plurality of work machines performing work based on the revised scheduled work plan (**carrying out said work order to maintain the asset**), and said plurality of work machines transmitting the actual work performance results on a basis of said schedule work plan to said server apparatus by said communication means (**remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance problems, when routine maintenance is required} received from the Internet**) [Column 2, lines 55-57; Claim 9].

As per claim 48, Melby et al. teaches a scheduled work plan production apparatus that, in cases where a scheduled work plan is produced according to work request data indicating particulars of work requested by an ordering party, a plurality of work machines is obtained, and work is caused to be done using said plurality of work machines so obtained, based on said produced scheduled work plan, produces said scheduled work plan, comprising:

(a) a server apparatus (**remote analysis system 50**) [Column 7, lines 8 , Figure 3];

(b) a database for storing a schedule and performance results data indicating a relationship between a scheduled work plan previously produced and actual work

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performance results as performed on basis of said scheduled work plan at the server apparatus [**see analysis of claim 46(c) above**];

(c) a plurality of work machines, said plurality of the work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 46(a) above**];

(e) a terminal apparatus on said ordering party end, wherein said terminal apparatus, said server apparatus, only at least one leader work machine of said plurality of work machines, and are connected by a second communication means configured to facilitate reciprocal communications only among said terminal apparatus, said server apparatus, said at least one leader work machine of said plurality of work machines, and said rental/production and terminal apparatus [**see analysis of claim 46(d) above**];

(f) wherein said work request data are input from said terminal apparatus to said server apparatus through said second communication means [**see analysis of claim 46(e) above**];

(g) wherein said server apparatus automatically facilitates producing a scheduled work plan responsive to the work request data and to the schedule and the performance results data, transmitting said scheduled work plan to said at least one leader work machine and to said rental/production end terminal apparatus through said second communication means, and updating the schedule and the performance results data in said database [**see analysis of claim 46(f) above**];

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(h) said at least one leader work machines giving work instructions to said plurality of work machines through said first communication means responsive to receipt of the scheduled work plan from said server apparatus, and transmitting actual work performance results as performed on basis of said scheduled work plan to said server apparatus by said second communication means **[see analysis of claim 46(g) above]**;

(i) wherein said server apparatus updates said database with the actual work performance results **[see analysis of claim 46(h) above]**;

(k) wherein the work machines are construction machines engaged in construction work **(assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as those described above, used in the manufacture of goods or the performance of services)** [Column 3, lines 55-62].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. *In re Venner*, 120 USPQ 192.

Neither Melby et al. nor Gudat et al. explicitly teaches:

(d) a rental/production end terminal apparatus for renting or producing said work machine, said rental/production end terminal apparatus being provided on the ends where rental/production is performed; and

(j) wherein said rental/production end terminal apparatus plans rental or production based on said scheduled work plan from said server apparatus.

As per (d), although Melby et al. does not explicitly teach the inclusion of a rental/production end terminal apparatus on a communication means, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that connecting data terminals to an electronic communications network, such as the Internet, is a step that is old and well known in the art. Furthermore, the step of connecting an additional terminal apparatus to the electronic communications network taught by Melby et al. can be performed in a similar fashion to the ordering party terminal, meeting the limitation of the claim.

Further, regarding (j), handheld device 168 of Melby et al. is in real-time two way communication with analysis controller database 78 and is enabled to update said database regarding required and scheduled maintenance. The system is further enabled to automatically order replacement parts. The need to rent or produce additional work machines may be based on information entered by the handheld device.

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Further, the system can be enabled to automatically order replacement/additional machines, in a fashion similar to ordering replacement parts. Said orders are propagated throughout the analysis system 50. The system provides for automatic generation of reports for required maintenance work, and can be enabled to generate order reports for required additional/replacement work machines. Therefore, handheld device 168 is capable of facilitating such actions, meeting the limitations of the claim.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to include a terminal for renting/producing work machines because the resulting invention would enable the system to obtain additional resources, as needed, to provide an adequate number of work machines to perform prescribed work without suffering costly delays (time and financial, as resulting from a decreased number of available work machines, delaying the completion of said prescribed work).

Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (l) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work

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- (m) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals)** [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines

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the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

As per claim 49, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, further comprising:

(a) an information display for displaying information outside of a work site where said plurality of work machines are operating is provided in one or more of said plurality of work machines;

(b) wherein said server apparatus produces information relating to said work site, based on the work machine information, and on the data stored in said database, and transmits said information relating to said work site to said leader work machine through said second communication means; and

(c) said at least one leader work machine displays said information relating to said work site on said information display.

However, it has been admitted as prior art, as a result of improperly/untimely challenged Official notice that it is old and well known in the arts to notify relevant parties of the status and availability (or unavailability) of work machines at a site. Melby et al. collects a plurality of data on the usage of work machines to determine whether the responsibility for the maintenance being performed on the asset should rest with the manufacturer, supplier, owner or user of the asset [Column 9, lines 38-44] and also to analyze a knowledgebase of relevant information to analyze appropriate trends [Column

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12, lines 9-21], such as those pertaining to the need for preventative maintenance.

Further, Gudat et al. teaches monitoring machines at a work site and using a single machine to provide real time position and site progress of multiple machines operating on a site **(The present invention addresses the need for coordinating the movement and work of multiple machines 14 working on the same site 12. This is achieved by creating a common, dynamically-updated site database reflecting the real time position and site progress of multiple machines operating on the site and using that common database to give a machine operator or supervisor accurate, coordinate, real time machine position and site update information for every machine operating on the site. Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 51-63, Column 6, lines 4-7] Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to include an information display at a work site so that appropriate personnel can be notified of a need to procure replacement work machines, obtain a work order, or to reconfigure a work schedule to compensate for the status of a work machine on which a main work machine is dependent on to perform work.

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As per claim 50, Melby et al. teaches the work machine management system according to claim 49, wherein:

(a) said information display is deployed on a work machine other than said one leader work machine (**handheld device 168**); and

(b) said at least one leader work machine transmits transmitted information relating to said work site to another work machine through said first communication means (**each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis**) and causes said information to be displayed on said information display deployed on said other work machine (**handheld device 168 is in real-time two way communication with analysis controller database, thus, dealer billing systems, inventory listings, customer work order approval records, fleet management information can be accessed by handheld device 168; handheld device 168 is used to update database 78 including labor information and an identification of any parts required to effect a repair**) [Column 7, lines 5-8, 14-27, 38-39].

As per claim 51, Melby et al. teaches the work machine management system according to claim 33, further comprising:

(a) an information display for displaying information outside of a work site where said plurality of work machines are operating, installed in the periphery of said work site (**receiver 35 that is provided at a fixed location within the environment in**

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which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon)

[Column 7, lines 24-37];

(b) wherein said server apparatus produces information relating to said work site, based on said work machine information and on the data stored in said database, and transmits said information relating to said work site to said one leader work machine through said second communications means **[see analysis of claim 33(g) above]**;

(c) wherein said at least one leader work machine **(local controller 36)** displays said information relating to said work site on said information display **(receiver 35 confirms the accuracy and completeness of information transmitted by data acquisition unit 32; local controller 36 is connected to receiver 35)** [Column 7, lines 38-53 and 62].

As per claim 52, Melby et al. teaches the work machine management system according to claim 51, wherein said one leader work machine causes the information relating to said work site to be displayed on said information display installed in the periphery of said work site via said first communication means **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated)** [Column 7, lines 24-37].

As per claim 53, Melby et al. teaches the work machine management system according to claim 33, further comprising:

(a) an information display for providing information outside of a work site where said plurality of work machines are operating, installed in the periphery of said work site **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated)** [Column 7, lines 24-37]; and

(b) wherein said server apparatus **(remote analysis system 50)** produces information relating to said work site, **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)** based on work machine information that has been transmitted and on said data stored in said database **(real-time and historical information; determine that further preventative maintenance is required)**, transmits said information relating to said work site to said information display through said second communication means, and causes said information relating to said work site to be displayed on said information display **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the**

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environment to receive the information transmitted thereon) [Column 7, lines 24-37].

As per claim 54, Melby et al. teaches a work machine management system of work machines according to claim 33, further comprising:

(a) environmental condition measurement means **(data acquisition device 32)** for measuring environmental conditions **(any desired operating conditions of the forklift 31 that might be considered important in making effective management decisions regarding the operation of the forklift 31; distances traveled)** in a periphery of a work site, provided in the periphery of said work site [Column 6, lines 48-63];

(b) at least one an information display for displaying information outside of a work site, being arranged in at least one of the periphery of said work site, and said at least one leader machine **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon)** [Column 7, lines 24-37];

(c) said second communication means connecting said environmental condition measurement means with a server apparatus **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for**

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transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis) [Column 7, lines 5-8, 14-27, 38-39] and connecting said server apparatus with said at least one information display; and

(d) display information production means, provided at a server apparatus producing environmental conditions display information based on measured environmental condition values and on data stored in a database **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon** [Column 7, lines 24-37]; wherein

(e) said measured environmental conditions values are measured by said environmental condition measurement means, in conjunction with work progress of said plurality of work machines, and are transmitted from said environmental condition measurement means to said server apparatus through said second communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** [Column 7, lines 5-8, 14-27, 38-39]; and

(f) said server apparatus produces environmental condition display information **(information relating to the operational characteristics of the asset 11 being tracked, or operating conditions of the forklift 31 that might be considered important in making effective management decisions regarding the operation of**

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forklift 31), based on measured environmental conditions values {data provided by transmitter 33} and on data stored in said database (analysis controller database 78), said server apparatus transmits said environmental condition display information to said information display through said second communication means (receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon; receiver 35 is connected to local controller 36, which is connected to remote analysis system 50 by conventional modem 37 or electronic communications network, such as the Internet), and said server apparatus causes said environmental condition display information to be displayed on said information display [Column 4, lines 34-44, Column 6, lines 52-63, Column 7, lines 24-37, 61-62, Column 8, lines 23-30].

Neither Melby et al. nor Gudat et al. explicitly teaches the measurement of environmental conditions including noise levels and toxic chemical concentrations. However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art to collect data regarding environmental conditions, and further that local, federal and international ordinances, regulations, and laws govern acceptable noise levels and toxic chemical concentration limits for areas in which work is performed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of the Melby-Gudat combination to measure noise levels and toxic chemical

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concentrations, because doing so would allow the Melby-Gudat combination to perform work orders while simultaneously being in compliance with local, federal and international ordinances, regulations, and laws governing the noise, pollution, and toxic levels of the performed work, thereby avoiding costly fines and maintaining public safety, and minimizing the inconvenience to surrounding parties.

As per claim 55, Melby et al. teaches the work machine management system according to claim 33, wherein data on performance results for work performed by said plurality of work machines are stored in said database (**analysis controller database 78**) in said server apparatus for each of said plurality of work machines (**real-time and historical information; maintenance information performed {step 82}**), and when data requesting production of a work report relating to a specific work machine are transmitted from said at least one leader work machine to said server apparatus (**local controller 36 that is adapted to receive and store data from each of the receivers 35 and to periodically transmit gathered and stored information regarding the individual operating characteristics to the remote analysis system 50 for analysis**) through said second communication means (**modem 52 or similar communications device; conventional modem 37 or other communications device; electronic communications network, such as the internet 40**), said server apparatus reads out work performance results data corresponding to said specific work machine from data recorded in said database, said server apparatus produces a work report indicating particulars of work performed in a certain time period by said specific work machine

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(management reports relating to the procurement and utilization of a plurality of the forklifts 31), and said server apparatus transmits said work report so produced to said at least one leader work machine by said second communication means, and said at least one leader work machine manages said plurality of work machines based on said work report **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 7, lines 62-67, Column 8, lines 23-30, 48-52, Column 11, lines 42-44, Column 12, lines 18-19, 56-57; Claim 9].

As per claim 56, Melby et al. teaches the work machine management system according to claim 55, wherein:

(a) a terminal apparatus for labor management **(handheld device 168)** is provided on the end where labor management is performed for persons on board said plurality of construction machines **(handheld device 168 is associated with specific maintenance personnel assigned to carry out the maintenance)** and

(b) wherein said at least one leader work machine is connected by said second communication means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

(c) wherein said at least one leader work machine transmits said work report to said terminal apparatus for labor management by aid communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with**

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specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance) [Column 17, lines 5-9, 21-27]; and

(d) wherein said terminal apparatus for labor management performs labor management for those on board said plurality of construction machines based on said work report so transmitted **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from the knowledgebase; in response to a fault code, electronic checklist 154 is to be completed by asset operator on a regular basis in accordance with OSHA requirements)** [Column 17, lines 12-16].

As per claim 57, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information is work condition information indicating actual work conditions of a work machine **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)**

[Column 4, lines 34-44, Column 6, lines 48-63];

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(b) data on schedule of work to be performed by said plurality of work machines **(maintenance invoice)** are stored in a database in said server apparatus **(maintenance organization 86 both receives and provides information to database 78)**, for each of said plurality of work machines [Column 11, line 61 – Column 12, line 4, Column 12, lines 34-36] ;

(c) wherein, when said work condition information is transmitted from said at least one leader work machine to said server apparatus through said second communication means, said server apparatus reads out said work schedule data from data stored in said database, compares said work schedule data and said work condition information, and, when there is a discrepancy, produces anomaly information indicating that an anomaly has occurred in corresponding work machine **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)**, and transmits said anomaly information **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** to said at least one leader work machine through said second communication means **(fault code may be generated based on the actions of the asset operator)** [Column 6, lines 60-63, Column 15, lines 30-41, Column 16, lines 6-7, and lines 26-30]; and

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(d) wherein said at least one leader work machine manages said plurality of work machines based on said transmitted anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 58, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information includes position information indicating an actual position of a work machine **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** [Column 4, lines 34-44, Column 6, lines 48-63];

(b) operating position data reflecting operating positions at which said plurality of work machines operate are stored in the database **(real-time and historical information stored in analysis controller database 78; maintenance information performed {step 82})** [Column 12, lines 18-19, 56-57];

(c) wherein, when said position information is transmitted from said at least one leader work machine to said server apparatus through said second communication means, said server apparatus reads out said operating position data from said data

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stored in said database, compares said operating position data and said position information, and, when the position information deviates from the operating position data, produces anomaly information indicating that an anomaly has occurred in corresponding work machine **(fault code may be generated based on the actions of the asset operator {such as incorrect/unscheduled operating position} changes in operational parameters associated with asset 31 may result in the generation of a specific fault code)**, and transmits said anomaly information so produced to said at least one leader work machine by said second communication means **{data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote analysis system 50 via the Internet 40, as seen in Figure 3}** [Column 15, lines 17-20, 54-62, Column 16, lines 6-7, Column 17, lines 25-27, Figure 3]; and

(d) wherein said at least one leader work machine manages said plurality of work machines based on said transmitted anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 59, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information includes attitude information indicating an actual attitude of a work machine **(operational characteristics of the particular asset**

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11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like) [Column 4, lines 34-44, Column 6, lines 48-63];

(b) attitude limit values for said plurality of work machines are stored in the database in said server apparatus **(real-time and historical information stored in analysis controller database 78; maintenance information performed {step 82})** in said server apparatus [Column 12, lines 18-19, 56-57];

(c) wherein when said attitude information is transmitted from said main at least one leader machine to said server apparatus through said second communication means, said server apparatus reads out said attitude limit values from said data stored in said database, compares said attitude limit values and said attitude information, and, when the attitude information exceeds the attitude limit values, produces anomaly information indicating that an anomaly has occurred in corresponding work machine **(fault code may be generated based on the actions of the asset operator {such as actual attitude exceeding attitude limit value}; changes in operational parameters associated with asset 31 may result in the generation of a specific fault code)**, and transmits said anomaly information to said main work machine through said second communication means [Column 15, lines 54-62, Column 16, lines 6-7]; and

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(d) wherein said main work machine manages said plurality of work machines based on said transmitted anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 60, Melby et al. teaches the work machine management system according to claims 57, wherein:

(a) an anomaly handling terminal apparatus **(handheld device 168)** is provided on the end where anomaly handling is performed for a construction machine where an anomaly has occurred, and said anomaly handling terminal apparatus and said server apparatus are connected by a third communication means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78; data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote analysis system 50 via the Internet 40, as seen in Figure 3)** [Column 15, lines 17-20, Column 17, lines 25-27, Figure 3];

(b) wherein said server apparatus, when anomaly information has been produced, transmits said anomaly information **(fault code)** to anomaly handling terminal apparatus through said third communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance**

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personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance) [Column 17, lines 5-9, 21-27]; and

(c) wherein said anomaly handling terminal apparatus performs anomaly handling for said construction machine at which said anomaly occurred, based on said anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 61, Melby et al. teaches the work machine management system according to claim 57, wherein:

(a) an anomaly handling terminal apparatus **(handheld device 168)** is provided on the end where anomaly handling is performed for a construction machine at which an anomaly has occurred, and wherein said anomaly handling terminal apparatus and said at least one leader work machine are corrected by a third communication means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78; data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote**

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analysis system 50 via the Internet 40, as seen in Figure 3) [Column 15, lines 17-20, Column 17, lines 25-27, Figure 3];

(b) wherein said at least one leader work machine transmits said anomaly information **(fault code)** to said anomaly handling terminal apparatus through said third communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said anomaly handling terminal apparatus performs anomaly handling for said construction machine at which said anomaly occurred, based on said anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 62, Melby et al. teaches a management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a plurality of work machines, said plurality of work machines being respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 33(a) above**];

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(b) a server apparatus, wherein only at least one main working machine of said plurality of work machines is connected to the server apparatus by a second communication means facilitating reciprocal communications only between said server apparatus and said at least one leader work machine [**see analysis of claim 38(b) above**];

(c) work machine information detection means for detecting work machine information provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(d) a database for storing data for managing said plurality of work machines, and management information production means for producing management information based on said work machine information and on said data stored in said database, provided at said server apparatus end [**see analysis of claim 33(d) above**];

(e) in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means, and said work machine information so detected is transmitted to said at least one main work machine through said first communication means [**see analysis of claim 33(e) above**];

(f) said at least one main work machine transmits said transmitted work machine information to said server apparatus through said second communication means [**see analysis of claim 33(f) above**];

(g) said server apparatus automatically produces said management information based on said transmitted work machine information from said at least one

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leader machine and on said data stored in said database, and transmits said management information to said at least one leader work machine through said second communication means [**see analysis of claim 33(g) above**];

(h) said at least one leader work machine transmits work instructions to other work machines of said plurality of work machines through said first communication means, responsive to receipt of said transmitted management information [**see analysis of claim 33(h) above**];

(i) judgment means, provided in said at least one leader work machine for judging whether communications are possible or impossible by said second communication means between said at least one leader work machine and said server apparatus (**receiver 35 can send out a query signal on a predetermined basis to be received by the receiver 35 when the two units 32 and 35 are sufficiently close to communicate reliably with one another**) [Column 7, lines 38-53];

(j) wherein, when it is judged by said judgment means that communications by said second communications means are impossible, first latest management information received by said main work machine via said second communication means and second latest work machine information received by said at least one leader work machine via said first communication means are stored in said memory by said main work machine (**sensed operating conditions of the forklifts 31 are preferably stored in a memory of the data acquisition device 32 for subsequent communication to a remote analysis system**) until it is judged by said judgment means that communications by said second communication means have become possible {**when**

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the data acquisition unit 32 contacts receiver 35, the receiver 35 can send a first signal back to the data acquisition unit 32 to begin transmitting the acquired data; at the completion of the data transfer, the receiver 35 can send a second signal back to the data acquisition unit 32 to acknowledge the receipt of the transmitted data; thus, when communications are possible, data is transmitted between work machines} [Column 6, line 65 – Column 7, line 1, Column 7, lines 45-51];

(k) wherein the work machines are construction machines engaged in construction work **(assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as those described above, used in the manufacture of goods or the performance of services)** [Column 3, lines 55-62].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. *In re Venner*, 120 USPQ 192.

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Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (l) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work
- (m) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals)** [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

As per claim 63, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

- (a) a processor **{data is transmitted via the Internet, a plurality of networked computers that each have a data processor}**;
- (b) a plurality of work machines, said plurality of work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines **[see analysis of claim 33(a) above]**;
- (c) only at least one leader work machine of said plurality of work machines being connected to said processor by a second communication means facilitating reciprocal communications only between said processor and said at least one leader work machine of said plurality of work machines **[see analysis of claim 38(b) above]**;

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(d) work machine information detection means for detecting work machine information, provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(e) a database for storing managing data, for managing said plurality of work machines, and management information production software producing management information based on said managing data and said work machine information, operably connected to said processor [**see analysis of claim 33(d) above**];

(f) said processor, when said at least one leader work machine is determined, transmitting said managing data stored in said database and said management information production software to said at least one leader work machine through said second communication means [**see analysis of claim 33(g) above**];

(g) wherein, in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means provided in said plurality of work machines, and said work machine information is transmitted to said at least one leader work machine or machines through said first communication means [**see analysis of claim 33(e) above**];

(h) wherein said at least one leader work machine produces said management information, based on work machine information transmitted from said plurality of work machines through said first communication means, and on managing data and management information production software transmitted from said management system through said second communication means [**see analysis of claim 33(g) above**], said at least one leader work machine manages said plurality of

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work machines by transmitting said management information to other work machines of said plurality of work machines in accordance with said first communication means, responsive to receipt of said management information, said at least one leader work machine transmits said managing data so updated to said management system, by said second communication means, every time a certain time period elapses **(receiver 35 is connected to local controller 36 and is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis;** [Column 8, lines 23-25, further see analysis of claim 33(h) above]; and

(i) said processor updates content stored in said database using said managing data **(data in the form of new commands, program updates, instructions, and the like can be sent to the data acquisition unit 32 from the receiver 35)** [Column 7, lines 54-61];

(j) wherein the work machines are construction machines engaged in construction work **(assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as those described above, used in the manufacture of goods or the performance of services)** [Column 3, lines 55-62].

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Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (k) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work
- (l) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals)** [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

As per claim 64, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

- (a) a processor **{data is transmitted via the Internet, a plurality of networked computers that each have a data processor}**;
- (b) a plurality of work machines, wherein said plurality of work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines **[see analysis of claim 33(a) above]**;
- (c) only at least one leader work machine of said plurality of work machines being connected to the processor **(remote analysis system 50)** by a second communication means facilitating reciprocal communications only between said

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processor at said at least one leader work machine [**see analysis of claim 33(b) above**];

(d) work machine information detection means for detecting work machine information, provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(e) a database storing managing data for managing said plurality of work machines, and management information production software producing management information based on said managing data and work machine information, provided at said processor [**see analysis of claim 33(d) above**];

(f) wherein when said at least one leader work machine is determined, said managing data (**operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** stored in said database (**analysis controller database 78**) and said management information production software are written to said at least one leader work machine (**data acquisition device 32 is provided on each of the forklifts 31 for sensing and storing one or more characteristics of the associated forklift**) [Column 4, lines 34-44, Column 6, lines 48-50, 52-63];

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(g) wherein, in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means provided in said plurality of work machines, and said work machine information so detected is transmitted to said at least one leader work machine through said first communication means **[see analysis of claim 33(e) above]**;

(h) wherein said at least one main work machine produces said management information based on work machine information transmitted from said plurality of work machines to said at least one leader work machine in accordance with said first communication means, and on said managing data and management information production software **[see analysis of claim 33(g) above]**, said at least one leader work machine manages said plurality of work machines by transmitting said management information to other work machines of said plurality of work machines in accordance with said first communication means, responsive to receipt of said management information so produced **[see analysis of claim 33(h) above]**, and said at least one leader work machine updates said managing data **(receiver 35 is connected to local controller 36 and is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis;** [Column 8, lines 23-25]; and

(i) content stored in database in said processor is updated by the at least one leader work machine writing said updated managing data in accordance with said second communication means to said processor **(data in the form of new commands, program updates, instructions, and the like can be sent to the data acquisition unit 32 from the receiver 35)** [Column 7, lines 54-61];

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(j) wherein the work machines are construction machines engaged in construction work **(assets 11 are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. However, the prior art method could be used to track and manage any type of asset 11, such as those described above, used in the manufacture of goods or the performance of services)** [Column 3, lines 55-62].

Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach:

- (k) wherein the at least one leader machine is one of the work machines being construction machines engaged in construction work
- (l) wherein the at least one leader machine manages itself and the other work machines according to the management information

However, Gudat et al. teaches direct reciprocal communication between a plurality of work machines **(real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the**

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other machine position signals) [Column 3, lines 62-64], as well as a leader machine being a work machine and a construction machine engaged in construction work that is solely responsible for managing itself and other work machines according to management information by transmitting work instructions to other work machines **(Real time machine position information is “shared” by each machine with the common database via suitable transceiver apparatus 68....a single database, located on one machine can receive position information from each machine, update the site database locally, and transmit signals to each machine to direct their operation)** [Column 5, lines 61-63, Column 6, lines 4-7]

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site; thus, they are analogous to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHOI whose telephone number is (571)272-6971. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beth Boswell can be reached on (571) 272-6737. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

December 6, 2008

/P. C./
Examiner, Art Unit 3623

/Jonathan G. Sterrett/

Primary Examiner, Art Unit 3623